

**ABSTRACT OF THE DISCLOSURE**

A stem-like bone implant includes longitudinal structural members and tension cables that provide curvature control and support, and rigidity against bending and buckling. The longitudinal structural members and tension cables may become an integral part of a composite regenerated bone having a substantially increased strength over natural bone. The flexibility of the implant is controlled by specifically varying the structural geometry of certain portions of the implant, and by adjusting the tension in the tension cables before, during and after the implantation operation to thereby adjust the stiffness of the implant. The tension cables may be adjusted to produce asymmetric or non-uniform levels of tension in the longitudinal structural members.

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